Testing Strategy

Due to the relatively large hardware component of our project, our testing strategy will largely reflect this as we need to test our software on the hardware, but at the same time not damage the hardware. In order to do this, we are separating both the image recognition and the computer flying of the quadcopter to begin with. This way we can test them separately without the image recognition potentially damaging the quadcopter if it is not correct. Finally we will merge them together and test that they function as a whole. Below is an outline of our testing strategy:

Quadcopter

1. Test that the quadcopter functions correctly with manual control.
2. Test integration with the Rasberrypi
   1. quadcopter can move in the basic directions, speed up and slow down
   2. Quadcopter can take off successfully
   3. Quadcopter can land successfully
3. Test GPS component of quadcopter
   1. GPS reads correct coordinates
   2. Rasberrypi can quickly read a changing GPS
4. Quadcopter can follow a path specified by GPS coordinates

Image Recognition

1. Test that the software can identity when a person has entered the frame
2. Test that the software take successive frames and determine differences such as which you would find from movement.
3. Test that the software can identify potential obstacles
4. Test that the software can identify the direction that a particular target is moving
5. Test that camera can estimate distance from a given target

Integration

1. Test that the camera can find a target from the air
2. Test that the camera can still estimate the distance from the target
3. Test quadcopter adjusts distance to target based on the input from the camera
4. Test that the quadcopter reverts to the GPS if the camera fails, or loses target